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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/226,418	01/06/1999	AHMED A. HASSAN	107650	1101

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EXAMINER	
VERDIER, CHRISTOPHER M	

ART UNIT	PAPER NUMBER
3745	

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17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/226,418	HASSAN ET AL.	
	Examiner	Art Unit	
	Christopher Verdier	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10-22-02, 5-23-03* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,7-13 and 20-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20-22* is/are allowed.

6)☒ Claim(s) *1, 7-8, 10-13* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Applicant's Amendment dated October 22, 2002 and Reconsideration dated May 23, 2003 have been carefully considered but are deemed non-persuasive. Claims 1, 7-13, and 20-22 are pending. The new declaration of May 23, 2003 is acceptable. The specification has been amended to correct the informality set forth in the first Office action. Correction of the above matters is noted with appreciation.

The examiner agrees with Applicants that amended claim 1 defines over Soviet Union Patent 1,761,973 and O'Neil. With regard to Glezer 5,758,823, Applicants have argued that Glezer does not disclose or suggest the inclusion of a plurality of apertures on one airfoil surface, nor a plurality of apertures on each of two airfoil surfaces, and that amended claim 1 defines over Glezer. These arguments are not persuasive, because Glezer (column 7, lines 36-43 and referring to the aerodynamic body of figure 6) states that arrays of jet actuators along the leading and trailing edges and along the upper and lower surfaces of the airfoil results in displacement of its front and rear stagnation points, which may also be used to dynamically tailor and optimize the aerodynamic performance of the airfoil. With regard to the rejection of claims 7-8, 10, and 13 under 35 USC 103(a) as being unpatentable over Glezer in view of O'Neil, Applicants have argued that the rejection is traversed because these claims depend upon claim 1. This argument is not persuasive because claim 1 is not allowable as set forth above.

Applicants have rewritten claim 12 in independent form and have argued that claim 12 defines over the Soviet Union Patent 1,761,973 in that the Soviet Union Patent is directed to an entirely different case of a wind generator. This argument is not persuasive because amended

claim 12 is only limited to an airfoil and does not exclude a wind generator blade. With regard to Applicant's argument that in aerospace applications, it is desirable to change the blade's aerodynamic characteristics over only a small blade length proximate to the trailing edge, and that the Soviet Patent shows apertures along substantially the entire length of the lower blade surface, while claim 12 limits the arrays to within a distance of less than 8% of the blade chord length from the trailing edge, these arguments are not persuasive to define over the Soviet Patent. Claim 12, last two lines recite "at least one aperture is disposed along the aerodynamic surface a distance of less than 8 percent of the chord length from the trailing edge." Since claim 12 recites "at least one aperture", claim 12 does not exclude more than one aperture, and the rightmost aperture 6 of the Soviet Patent at the trailing edge of the airfoil 1 corresponds to the "at least one aperture". With regard to Applicants' argument that across a distance greater than about 8%, the inventors found that the unique advantages of the invention are lost, with respect to minimizing flutter, and that there is no motivation to modify the Soviet Patent in the proposed manner except for hindsight reasoning, these arguments are not persuasive to define over the Soviet Patent. Applicants' specification is silent as to any criticality, unexpected results, comparative data, or particular advantage gained by having the apertures located within a distance of less than 8% of the chord length from the trailing edge, and the Attorney arguments have no correspondence with the specification.

Terminal Disclaimer

The terminal disclaimer filed on May 23, 2003 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patents

5,938,404, 6,092,990, and 6,234,751 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Glezer 5,758,823 (figures 1A-1C and 6A-6B). Note the active control device for improving airflow characteristics in the vicinity of airfoil 91 having an outer aerodynamic surface 92 and an unnumbered interior volume (corresponding to "14" in figures 1A-1C), with an inherent chord of predetermined length, an unnumbered leading edge to the left in figures 6A-6B and an unnumbered trailing edge to the right in figures 6A-6B, plural apertures 10 on the outer aerodynamic surface, communicating the outer aerodynamic surface to the interior volume, an unnumbered chamber inherently disposed within the interior volume, defining a volume in fluid communication with the apertures, plural diaphragms 18 that define a wall of the chamber, which are movable from a first position to a second position to push air through the apertures and out of the interior volume of the aerodynamic structure, and which are movable from the second position to the first position to draw air through the apertures and into the interior volume, with

the drawing and pushing steps being performed by the diaphragms. Note controller 24 coupled to the plural diaphragms. Glezer (column 7, lines 36-43 and referring to the aerodynamic body of figure 6) states that arrays of jet actuators may be placed along the leading and trailing edges and along the upper and lower surfaces of the airfoil. This results in the total number of apertures corresponding to the total number of diaphragms, because each aperture has its own diaphragm.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7-8, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glezer in view of O'Neil. Glezer discloses an active control device substantially as claimed as set forth above, but does not disclose first and second sensors operatively coupled to the controller which are disposed on the aerodynamic surface and which measure a flow characteristic of air proximal the first and second sensors, with the controller regulating the oscillation frequency of at least one diaphragm in response to the flow characteristic, with the first and second sensors comprising pressure transducers, and being disposed proximal the leading edge.

O'Neil (figures 4-5) shows active control device having first and second sensors near 4, 5 operatively coupled to a controller which are disposed on an aerodynamic surface of an airfoil and which measure a flow characteristic of air proximal the first and second sensors, with the controller regulating the oscillation frequency of at least one diaphragm 13 in response to the flow characteristic, with the first and second sensors comprising pressure transducers, and being disposed proximal the leading edge, for the purpose of managing lift and reducing noise.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the active control device of Glezer with first and second sensors operatively coupled to the controller which are disposed on the aerodynamic surface and which measure a flow characteristic of air proximal the first and second sensors, with the controller regulating the oscillation frequency of at least one diaphragm in response to the flow characteristic, with the first and second sensors comprising pressure transducers, and being

disposed proximal the leading edge, as taught by O'Neil for the purpose of managing lift and reducing noise.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soviet Union Patent 1,761,973. The Soviet Union Patent discloses an active control device for improving air flow characteristics in a vicinity of an airfoil 1 having an outer aerodynamic surface 3/5 and an unnumbered interior volume, with an inherent chord of predetermined length, an unnumbered leading edge to the left and an unnumbered trailing edge to the right, plural apertures 6 on the outer aerodynamic surface, communicating the outer aerodynamic surface to the interior volume, an unnumbered chamber inherently disposed within the interior volume, defining a volume in fluid communication with the apertures, a diaphragm 2 that defines a wall of the chamber, which is movable from a first position to a second position to push air through the apertures and out of the interior volume of the aerodynamic structure, and which is movable from the second position to the first position to draw air through the apertures and into the interior volume, with the drawing and pushing steps being performed by the diaphragm. The rightmost aperture is located along the aerodynamic surface a distance from the trailing edge, but is not less than 8 percent of the chord length from the trailing edge of the airfoil.

The location of the aperture relative to the chord of the airfoil is deemed to be a matter of choice in design. It would have been obvious to a person having ordinary skill in the art to select/optimize the location to be a distance that is less than 8 percent of the chord length from the trailing edge of the airfoil, because one of ordinary skill in the art would recognize that the

location of the aperture from the trailing edge is a result-effective variable that influences the airfoil acoustic signatures and efficiency, and it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 4 of U.S. Patent No. 6,543,719 in view of Glezer 5,758,823. Claim 4 of U.S. Patent 6,543,719 claims substantially the same subject matter as claim 1 of the instant application, including an active control device (the active control device has the characteristics recited in the body of claim 4 of U.S. Patent 6,543,719), having an outer surface, an interior volume, plural apertures on the outer surface, communicating the outer surface with the interior volume, a chamber which inherently is within the interior volume,

formed by plural diaphragms and defining a volume in fluid communication with the apertures, a controller coupled to the plural diaphragms, and controlling the movement of the diaphragms, and a total number of the plural apertures corresponding to the total number of the plural diaphragms.

However, claim 4 of U.S. Patent 6,543,719 although claiming a rotor blade with an outer skin, does not claim that the rotor blade is in the form of an airfoil having an outer aerodynamic surface and a chord of predetermined length, with the aerodynamic surface comprising a leading edge and a trailing edge (claim 1 of the instant application), with the plural apertures disposed proximal the trailing edge (claim 11 of the instant application).

Glezer (figures 1A-1C and 6A-6B) shows an active control device for a rotor blade that is in the form of an airfoil 91 having an outer aerodynamic surface 92, with an inherent chord of predetermined length, an unnumbered leading edge to the left in figures 6A-6B and an unnumbered trailing edge to the right in figures 6A-6B, plural apertures 10 on the outer aerodynamic surface, communicating the outer aerodynamic surface to the interior volume, and plural diaphragms 18 that to push air through the apertures and out of the interior volume of the aerodynamic structure, and draw air through the apertures and into the interior volume. Column 7, lines 36-43 states that arrays of jet actuators may be placed along the leading and trailing edges and along the upper and lower surfaces of the airfoil, for the purpose of optimizing aerodynamic performance.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the rotor blade of claim 4 of U.S. Patent 6,543,719 such that is in the form of an airfoil having an outer aerodynamic surface and a chord of predetermined length, with the aerodynamic surface comprising a leading edge and a trailing edge, and with the plural apertures disposed proximal the trailing edge, as taught by Glezer, for the purpose of optimizing aerodynamic performance. With regard to the additional features recited in claim 4 of U.S. Patent 6,543,719, such as adjusting the rotor twist in accordance with at least one of a first flight mode of an aircraft and a second flight mode of the aircraft, it would have been further obvious to a person having ordinary skill in the art to eliminate these features, for the purpose of reducing cost and simplifying assembly.

Claims 7-8, 10, and 13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 4 of U.S. Patent No. 6,543,719 and Glezer 5,758,823 as applied to claim 1 above, and further in view of O'Neil. The modified active control device of claim 4 of U.S. Patent 6,543,719 shows all of the claimed subject matter except for first and second sensors operatively coupled to the controller which are disposed on the aerodynamic surface and which measure a flow characteristic of air proximal the first and second sensors, with the controller regulating the oscillation frequency of at least one diaphragm in response to the flow characteristic, with the first and second sensors comprising pressure transducers, and being disposed proximal the leading edge.

O'Neil (figures 4-5) shows active control device having first and second sensors near 4, 5 operatively coupled to a controller which are disposed on an aerodynamic surface of an airfoil and which measure a flow characteristic of air proximal the first and second sensors, with the controller regulating the oscillation frequency of at least one diaphragm 13 in response to the flow characteristic, with the first and second sensors comprising pressure transducers, and being disposed proximal the leading edge, for the purpose of managing lift and reducing noise.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to provide the modified active control device of claim 4 of U.S. Patent 6,543,719 with first and second sensors operatively coupled to the controller which are disposed on the aerodynamic surface and which measure a flow characteristic of air proximal the first and second sensors, with the controller regulating the oscillation frequency of at least one diaphragm in response to the flow characteristic, with the first and second sensors comprising pressure transducers, and being disposed proximal the leading edge, as taught by O'Neil for the purpose of managing lift and reducing noise.

Allowable Subject Matter

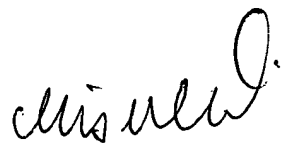
Claims 20-22 are allowed.

Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (703)-308-2638. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (703) 308-1044. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.



Christopher Verdier
Primary Examiner
Art Unit 3745

C.V.
October 31, 2003